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P.I.L.L- Pharmacy Information Link Letter

Aga Khan University
Hospital, Nairobi
Pharmacy Department

November/ December 2006

ANTIBIOTIC RESISTANCE SURVEILLANCE METHODS AND PATTERNS

- Period covered - 2004 January - 2005 April (16 months).
- Surveillance performed in 3 centres in the city. Microbiology labs in Kenyatta National Hospital, The Aga Khan Hospital and Gertrude Garden Children's Hospital are included. They provide a good case mix and representative sampling.
- All the labs follow the same NCCLS protocols for antibiotic sensitivity testing using the same composition of antibiotic disks.
- They all participate in the same external quality assurance programme of CDC/WHO for antimicrobial sensitivity testing.
- Equivocal strains are periodically transferred to KEMRI as external QC and for MIC studies.
- Data was manually recorded in designed data sheets capturing all information.
- Data was entered into excel sheet and analysed.
- >85000 cultures were involved.
- 8445 positive isolations were made.
- 6586 isolates were clinically significant hence tested for antibiotic susceptibility - (<10% yield).

Only part of the data is being presented in this report.

LIMITATIONS OF THIS KIND OF DATA

- >85000 cultures were involved.
- 8445 positive isolations were made.
- 6586 isolates were clinically significant hence tested for antibiotic susceptibility - (<10% yield).

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INDICATORS OF EXCESSIVE SELECTIVE ANTIBIOTIC PRESSURE IN THE ENVIRONMENT

1. 6% of outpatient urine cultures were oxacillin resistant staphylococcus epidermidis (ORSE) in 1999, 13% in 2005.
2. Total ESBL production in 18% enteric bacilli.
3. Abnormal pharyngeal carriage of gram negative bacilli in the outpatients has risen from 6% in 1999 to 10% presently.
4. Enterococci isolates from stool samples and vaginal swab cultures are found to be multi-resistant.

COMPOSITION OF ORGANISMS

ORGANISMS	TOTAL NUMBER
Staphylococci	1680
Escheria coli	1158
Enterococci	738
Pseudomonas aeruginosa	632
Klebsiella pneumoniae	568
Shigella spp.	233
Salmonella spp.	221
Various enteric, non-fermenter and miscellaneous organisms	1356
TOTAL	6586

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Expensive Drugs 4

McHUMOR by T. McCracken



Ted failed to follow the advice on his medication
that he not operate heavy machinery while on it.
Now he's planning to sue the drug company.



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STAPHYLOCOCCI				STREPTOCOCCUS PNEUMONIAE			
Antibiotic	2001	2003	2004-2005	Antibiotic	2001	2003	2004 - 2005
	780 isolates	1200 isolates	1680 isolates		200 isolates	102 isolates	186 isolates
	Susceptible	Susceptible	Susceptible		Disc diffusion	E test	Disc diffusion
Penicillin/Amoxicillin	69%	72%	74%	Co-amoxiclav	-	99%	98%
Cotrimoxazole	59%	56%	55%	Clarithromycin	-	86%	88%
Minocycline, Tetracycline	45%	59%	58%	Cefprozil	-	95%	92%
Nitrofurantoin	94%	91%	96%	Cefaclor	-	76%	88%
Gentamicin	92%	89%	91%	Cefuroxime	97%	95%	97%
Nalidixic acid	79%	81%	79%	Cotrimoxazole	42%	18%	22%
Cephalosporins (Cefuroxime, Cefaclor etc)	93.50%	92%	90%	Ciprofloxacin	-	-	96%
12% Staphylococci are ORSA/ORSE. They are susceptible to:-		2003	2004 - 2005	Ofloxacin	93.50%	-	96%
Vancomycin		100%	100%	Penicillin	63%	52%	68%
Netilmycin		92%	94%	Erythromycin	86%	-	78%
Nitrofurantoin		98%	96%	Chloramphenicol	81.50%	-	82%
Nalidixic acid		22%	28%	Tetracycline	77%	-	72%
Ciprofloxacin		45%	52%				
STREPTOCOCCUS PYOGENS				HAEMOPHILUS INFLUENZAE			
Antibiotic	2001	2003	2004-2005	Antibiotic	2001	2003	2004 - 2005
	406 isolates	320 isolates	423 isolates		26 isolates	111 isolates	41 isolates
	Susceptible	Susceptible	Susceptible		Susceptible	Susceptible	Susceptible
Penicillin-Ampicillin	100%	100%	100%	Penicillin-Ampicillin	94%	33%	50%
Cefuroxime (Cefalexin, Cefprozil, Cefactor, Cefadroxyl etc.)	100%	100%	100%	Augmentin	99%	100%	90%
Ceftriaxone	100%	100%	100%	Cefuroxime + other second generation Cephalosporins	98%	100%	90%
Tetracycline (Minocycline, Doxycycline etc)	91%	88.50%	72%	Ceftriaxone + other third-generation Cephalosporins and ceftazidime	100%	100%	100%
Erythromycin (Azithromycin etc)	84%	71%	74%	Chloramphenicol	86%	-	90%
ENTEROCOCCI				Tetracyclines	78%	-	-
Antibiotic	2001	2003	2004-2005	Cotrimoxazole	74%	0%	-
	700 isolates	560 isolates	738 isolates	Ofloxacin	93%	-	92%
	Susceptible	Susceptible	Susceptible	Ciprofloxacin	-	100%	92%
Penicillin/Ampicillin/Amoxicillin	83.50%	78%	75%	Azithromycin and Clarithromycin	-	100%	92%
Augmentin	91.50%	94%	95%	SHIGELLAS – 233	S. sonnei	S. flexneri	S. dysenteriae
High Level Gentamicin	90.50%	82%	80%	Antibiotic	82	119	32
High Level Streptomycin	84%	77%	72%	Ampicillin	33%	25%	15%
Ciprofloxacin	81%	79%	82%	Cotrimoxazole	26%	26%	10%
Vancomycin (six resistant isolates seen so far) in Nairobi	100%	100%	100%	Chloramphenicol	70%	85%	100%
Nitrofurantoin	98.50%	97%	95%	Ciprofloxacin	100%	100%	100%
Nalidixic Acid	89	74%	72%	Ceftriaxone	100%	100%	100%

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ESCHERICHIA COLI				KLEBSIELLA PNEMONIAE			
Approximately 14% of isolates produce extended spectrum beta lactamases in 2003, 22% in 2005				Approximately 11% are extended spectrum beta lactamase producers in 2003, 25% in 2005.			
Antibiotic	2001	2003	2004–2005	Antibiotic	2001	2003	2004 – 2005
	960 isolates	828 isolates	1158 isolates		386 isolates	512 isolates	568 isolates
	Susceptible	Susceptible	Susceptible		Susceptible	Susceptible	Susceptible
Augmentin	91%	88%	87%	Augmentin	88.50%	86%	89%
Gentamicin	85%	86%	88%	Gentamicin	90.50%	84%	88%
Amikacin	93%	89%	90%	Amikacin	90%	90%	92%
Chloramphenicol	67%	53%	58%	Chloramphenicol	55%	61%	64%
Cefuroxime	90.50%	89%	82%	Cefuroxime	95%	91%	88%
Ceftazidime	96%	89%	91%	Ceftazidime	95%	91%	89%
Ceftriaxone	96%	89%	91%	Ceftriaxone	95%	91%	89%
Cefaclor	96%	89%	82%	Cefaclor	94%	91%	87%
Cotrimoxazole	63%	50%	57%	Nitrofurantoin	89%	86%	91%
Ciprofloxacin	93%	90%	92%	Nalidixic acid	74%	72%	87%
Nitrofurantoin	79%	80%	87%	Ciprofloxacin	89%	91%	89%
Nalidixic acid	81%	75%	68%	Cefepime	-	91%	87%
Cefepime	-	91%	86%	Meropenem/Imipenem	-	100%	100%
Meropenem/Imipenem	-	98%	100%	Tazo/Piperacillin	-	100%	100%
Tazo/Piperacillin	-	99%	99%	Ticarcillin/Clavulanate	-	100%	100%
Ticarcillin/Clavulanate	100%	100%	100%				
PSEUDOMONAS AERUGINOSA				ENTEROBACTER SPP, PROTEUS AND PROVIDENCIA SPP			
Antibiotic	2003	2004 – 2005		Antibiotic	Susceptible 2003	2004 – 2005	
		632 isolates				356 isolates	
Piperacillin	76%	81%		Gentamicin	85%	78%	
Tazobactam/Piperacillin	100%	99%		Amikacin	86%	83%	
Imipenem/Meropenem	94%	91%		Chloramphenicol	64%	55%	
Ceftazidime	74%	75%		Cefuroxime	87%	72%	
Ceftriaxone	74%	74%		Ceftazidime	92%	82%	
Gentamicin	72%	58%		Ceftriaxone	92%	82%	
Amikacin	86%	84%		Cefaclor	87%	72%	
Ticarcillin – Clavulanate	100%	-		Nitrofurantoin	89%	91%	
Ciprofloxacin	81%	78%		Nalidixic acid	72%	64%	
Cefepime	74%	62%		Ciprofloxacin	80%	86%	
				Cefepime	92%	89%	
				Meropenem/Imipenem	-	99%	
				Tazo/Piperacillin	-	98%	
				Ticarcillin/Clavulanate	-	99%	
SALMONELLA SPP.							
Antibiotic	221 ISOLATES						
	Percentage susceptible						
Ampicillin	58%						
Cotrimoxazole	45%						
Chloramphenicol	55%						
Ciprofloxacin	100%						
Cetrixone	93%						

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NEW DEVELOPMENTS ON THE PRESCRIPTION ADMINISTRATION CHART

The Pharmacy Department is continuously looking at ways and means of improving the quality of care provided to the patient. As you all know and must have used, there is the In-patient Medication Order Sheet (Treatment Sheet) to prescribe all medications for patients admitted or undergoing surgery in the hospital. The Pharmacy Department in consultation with various clinical departments and approved by the Pharmacy and Therapeutics Committee has revised the Treatment Sheet. The new Treatment Sheet will be operational as from 1st January 2007.

The new Treatment Sheet is in two colours now; the first four pages in yellow (specific for antibiotic prescribing) and the rest in white and it contains:

PAGE 1 (Yellow)

Patient details, drug allergies and lab parameters important for antimicrobial prescribing such as culture and sensitivity, serum creatinine levels, liver function and dialysis, section to indicate if antibiotic is for surgical prophylaxis, section to indicate if antibiotics are for empiric therapy or for documented infection

For prescribing Prophylactic doses of antibiotics

PAGE 2 – 3 (Yellow)

For prescribing Therapeutic/Empiric regimens of antibiotics

PAGE 4 (Yellow)

Principles of anti-microbial prescribing

All areas of the Antibiotic Order sheet must be fully completed before Pharmacy will dispense Antibiotics

Antibiotics orders will lapse after 24 hours for Prophylactic Orders, after 72 hours for Empiric Orders and after 7 days for Therapeutic Orders unless renewed.

A list of special Antibiotics which must be only prescribed after consultation with or endorsement by the primary physician.

The Request form for C/S must be sent before Antibiotics have been initiated and with appropriate clinical history and history of antibiotics filled.

PAGE 5 (White)

For prescribing Once only, Pre-medication and PRN medication

PAGE 6 – 8 (White)

For prescribing Regular medications section for all other drugs

PAGE 9 (White)

Discharge prescription. Please note it is legally required to record the name of the patient in the name section of the discharge prescription and the doctors name and signature.

PAGE 10 (White)

Policies for Doctors, Nurses and Pharmacists on prescribing, administering and dispensing. Please enjoy reading this section and ensure that you adhere to the said policies.

NB: It is mandatory to provide all the requested information before the Pharmacy Department can dispense.

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NOTICE

Dear doctors,

Like you get consent from your patients for all procedures, the Pharmacy Department would like to similarly ask you to get consent from the patients before prescribing very expensive drugs such as Tenectaplast and Gamma globulin. For example a full dose of Gamma globulin i.e. 30mg per day for 5 days, costs Kshs 2.1 million. Getting consent from the patient and/or the insurance will ensure that the patient is fully informed about the cost and/or alternatives before therapy is initiated. We hope these efforts will minimize patients being unhappy at the time of settling medicine bills.

